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## YOUR HEALTH

### Stem Cell FAQ

by Fran Berger  
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#### What the heck is an embryonic stem cell?

Embryonic stem cells are cells taken from a blastocyst—an early embryonic form consisting of an outer layer of cells and an inner cell mass—that is just a few days old. These cells are not yet "specialized," but give rise to specialized cells, like blood cells, brain cells, etc. Researchers say embryonic stem cells have the capacity to produce almost every kind of human cell and can be coaxed into producing specific types of cells, as needed. It's believed these stem cells hold promise for helping the body repair, regenerate and rejuvenate ailing and aging cells.

#### What's so great about stem cells?

Research is in its infancy, but scientists have had success growing and regenerating cells in lab animals. The scientific community believes research with embryonic stem cells may one day lead to cures or treatments for degenerative diseases such as Parkinson's and Alzheimer's. Others say stem cells could be used to test new drugs in the lab faster and more safely than in human clinical trials.

#### Why are some people up in arms about these cells?

Controversy is high over embryonic stem cells. Unlike stem cells taken from placentas and umbilical cords or from an adult's bone marrow, extracting embryonic stem cells results in the destruction of an embryo. Although the National Institutes of Health guidelines say these cells are not themselves embryos, opposition has come from those who believe all stages of embryonic cells are living parts of an embryo, and destroying them, for any reason, is morally and ethically wrong.

#### What are some other concerns?

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*Control, regulation and government funding.* President George W. Bush's decision to allow federal funding of stem cell research, but to limit it to only those stem cell lines—self-sustaining cell colonies—that already exist, is considered a middle-ground approach that may not result in a sufficient number of cell lines.

*From the lab to humans.* The medical and scientific communities are proceeding with caution. Translating successes in laboratory animals to humans is a long, slow process. Although there may be an ability for stem cells to grow new cells, researchers say there needs to be a way to control that growth, prevent rejection and ensure that the stem cells mature into exactly the specialized cells desired.

*Money and more money.* Millions of dollars also are at stake. Many research companies hope embryonic stem cells will lead to the development of drug therapies, and some of them say they may expand overseas if regulations or funding restrictions impede research in the United States. American scientists may accept positions overseas, causing fears of a "brain drain" in U.S. scientific and academic circles.

### **Are embryonic stem cells the only kind of stem cells?**

No. Adult stem cells are found in bone marrow, the brain, blood, skin, fat, tissue, muscle, umbilical cords and the placenta. However, researchers contend that embryonic stem cells that have yet to specialize hold the greatest hope for differentiating into the cell types needed to repair damaged cells or treat disease.

### **Aren't stem cells already being used?**

Yes. In bone marrow transplants, for example, doctors extract mature stem cells from a donor or from a cancer patient's own bone marrow. Successfully transplanted, the bone marrow—treated to remove any leftover cancer cells if it is from the patient—produces healthy blood and immune cells.

### **Is President Bush's decision final?**

No. Congress ultimately controls the purse strings. The subject of embryonic stem cell research undoubtedly will come up in future discussions over funding for the National Institutes of Health. So far, support or opposition to federal funding has not been falling along strict political party lines, so experts predict the debate will continue for quite a while.

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